



Attorney's Docket No. 47003.070002

Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Steven D. Seip, et al. :

Group No.: 1713

Serial No.: 10/673,791 :

Examiner: William K. Cheung

Filed: September.29, 2003 :

Confirmation No. 2992

For: Polyolefin Compositions Exhibiting Enhanced Stain Resistance

REPLY BRIEF ON APPEAL UNDER 37 C.F.R. § 41.41

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Appellants submit herewith a Reply Brief in response to the Examiner's Answer in the instant Appeal, mailed on April 17, 2006.

I. Summary

In his Answer to the Appellants' Brief on Appeal the Examiner has modified a number of his arguments, particularly with respect to the rejection of Claims 4, 5, 14, 15, 19, 20, 23 and 24 under 35 U.S.C. § 112, second paragraph. The Examiner has also attempted to provide a reasoned argument in support of his assertions of inherency of a number of the features recited in Claims 1, 12, 17 and 21 in the lone applied reference, Betso.

These new arguments are however, no better than those presented in the Final Office Action mailed January 5, 2005 ("Final Action").

II. Rejection Under 35 U.S.C. § 112, Second Paragraph

Appellants respectfully point out that the argument presented by the Examiner in his Answer is qualitatively different from that presented in the Final Action. The Examiner now seems to accept that thiosynergist is a term that is known in the art, but now asserts that because the Appellants have not specifically stated the type of synergy that is desired from the thiosynergists recited in Claims 4, 5, 14, 15, 19, 20, 23 and 24 that the term as used in those claims is still indefinite. Nonetheless, the Examiner's argument in this case improperly equates breadth with indefiniteness. The Appellants have submitted trade literature to demonstrate that the term "thiosynergist" is well known in the art of polypropylene additives. Therefore, that term as it is used in the claims would be understood by one having ordinary skill in the art. Further, the fact that thiosynergists may have more than one use as an additive in polypropylene would be similarly understood by one having ordinary skill in the art.

Thus, contrary to the Examiner's assertions, one having ordinary skill in the art would recognize that the term "thiosynergist" as it is used in the claims broadly encompasses thiosynergist as that term is understood in the art of polypropylene additives. The Examiner's

position assumes *a priori* that the Appellants' claims are entitled to only a narrowly defined set of compounds in the claimed compositions. This would have the Appellants narrowly define the term thiosynergist to exclude subject matter that the instant claims are entitled to.

Appellants respectfully submit that this is improper.

III. Rejections Under 35 U.S.C. § 102(b)

The Examiner's rejections of Claims 1 to 6 and 12 to 24 under 35 U.S.C. § 102(b) and his arguments in support thereof are predicated on a finding of inherency of practically every featured recited in the instant claims on Appeal in the one cited reference, Betso. Further, the key element in the Examiner's analysis, is based on a misinterpretation of the disclosure of Betso. Specifically, the Examiner bases his whole analysis on the assertion that Betso discloses impact copolymers having the same ethylene content as is recited in the claims on Appeal. From this basis the Examiner asserts that he has a reasonable basis to believe that all of the other properties of the claimed impact copolymer compositions are inherent in Betso. However, the Examiner has provided no basis for such inherency other than his own assertions, most of which appear to be based on a misunderstanding or oversimplification of the involved technology.

A. What is Recited in the Instant Claims on Appeal

It is appropriate to start with a review of what is recited in the claims on Appeal. The exemplary independent claims are 1, 12, 17 and 21. Claim 1 recites a household article and Claim 17 recites a composition for producing a household article. In each of Claims 1 and 17 a composition is recited comprising a *nucleated* propylene/ethylene *impact copolymer*. The propylene/ethylene impact copolymer has an ethylene content of up to 15 percent by weight. The propylene/ethylene impact copolymer has a xylene soluble fraction having an *intrinsic viscosity* of at least 3 dL/g, and a *molecular weight* $M_w/1000$ of at least about 350. The

propylene/ethylene impact copolymer contains an additive package *consisting essentially of* a phenolic antioxidant, a phosphite and an acid scavenger. The impact copolymer is formulated *essentially free of sodium containing additives*. Per dependent claims the impact copolymer may also contain a *thiosynergist*.

Claims 12 and 21 also recite a household article and composition for producing a household article respectively. In each of Claims 12 and 21 the composition is recited as being a polypropylene *homopolymer* having a crystallinity of at least 55 percent. The homopolymer contains an additive package *consisting essentially of* a phenolic antioxidant, a phosphite and an acid scavenger. The homopolymer is formulated *essentially free of sodium containing additives*.

B. What Betso Discloses

In the first instance, it should be pointed out that the Examiner has grossly misinterpreted the disclosure of Betso. The disclosure of Betso is not directed to impact copolymers or crystalline homopolymers *per se*. Rather, Betso is directed to an impact modifier comprising a linear ethylene/C₅-C₂₀ α -olefin copolymer or a substantially linear ethylene/C₃-C₂₀ α -olefin copolymer, so called thermoplastic elastomers. See Betso, col. 3, line 30 to col. 5, line 67, and col. 7, line 19 to col. 8, line 56. Betso teaches that the disclosed impact modifier can be compounded with a number of other polymers, among them polypropylene homopolymers and polypropylene impact copolymers. See Betso, col. 8, line 58 to col. 9, line 20. The sum of Betso's disclosure regarding polypropylene homopolymers and impact copolymers is several sentences at column 9, lines 10 to 17. Betso contains no teachings regarding the specific properties of homopolymers or impact copolymers as the Examiner asserts. The reference that the Examiner cites for an ethylene content of 1.5 to 7 percent explicitly refers to random

copolymers. See Betso at col. 9, lines 17 to 19. The Appellants have repeatedly pointed this out to the Examiner, yet the Examiner again erroneously cites this passage to support his position at page 5 of his Answer. Appellants respectfully submit that the difference between impact copolymers and random copolymers is so well understood by those having ordinary skill in the art as to not warrant explanation here.

Betso does disclose that its impact modifiers can be used in compositions that are processed into household articles. In sum, the features of the instant claims that Betso does disclose are: (1) household articles and (2) generally propylene/ethylene impact copolymers and polypropylene homopolymers. However, the disclosure of impact copolymers and homopolymers is cursory in nature and includes no discussion of the properties of or methods for manufacture of those polymers.

C. The Examiner's Inherency Arguments with Respect to Claims 1 and 17 are Erroneous

The Examiner asserts that the following elements of Claims 1 and 17 are inherent in Betso:

- (1) A xylene solubles fraction having an intrinsic viscosity of at least 3 dL/g.
- (2) A xylene soluble fraction having a molecular weight (Mw/1000) of at least 350.
- (3) A nucleated propylene/ethylene impact copolymer.
- (4) An additive package consisting essentially of a phenolic antioxidant, a phosphite and an acid scavenger.
- (5) A formulated propylene/ethylene impact copolymer that is essentially free of sodium containing additives.
- (6) A thiosynergist.

With respect to elements (1), (2) and (3), the Examiner's assertion of inherency is based solely on a single misinterpreted sentence at column 9, lines 15 to 20, and the Examiner's own misunderstanding of the art. Specifically, in his Answer at page 5 the Examiner asserts yet again that Betso discloses impact copolymers having an ethylene content of 1.5 to 7 percent. As set forth above, Betso discloses no such thing, as the cited section refers to random copolymers, which are distinct from impact copolymers.

Nonetheless, starting from this misinterpretation of Betso, the Examiner engages in faulty reasoning to determine that elements (1), (2) and (3) are inherent in Betso.¹ The Examiner takes the position that since the polymerization of ethylene and propylene can only take place through double bonds, that he has no expectation that the structure of the copolymer in Betso would be substantially different from that in Claims 1 and 17. While it is true that polymerization takes place via double bonds, the Examiner's statement is a gross oversimplification of the involved technology. Parameters such as catalyst, co-catalyst, electron donor, temperature, residence time and hydrogen pressure are routinely varied to produce impact copolymers having different properties. Again, Appellants respectfully submit that this fact is so well known by those having ordinary skill in the art as to not warrant further explanation here.²

Having summarily concluded that the impact copolymers in Betso are the same as those in Claims 1 and 17, the Examiner further summarily concludes that the properties of the xylene soluble fraction must also be the same.

With regard to the molecular weight of the xylene solubles, at page 5 spanning to page 6 of the Answer, the Examiner makes a statement to the effect that where the monomeric content

¹ It should be pointed out that the Examiner's arguments presented with respect to elements (1), (2) and (3) are absent from the Final Action, and are thus new in the context of this proceeding.

² Appellants respectfully point out that one having ordinary skill in the art is familiar with the process parameters that affect the recited properties and in light of the disclosure of the instant application would be able to produce propylene/ethylene impact copolymers having the recited properties.

of two polymers is the same, their solubility is dependent on molecular weight. Based on this statement, the Examiner states that he believes that the polymers of Betso have the same molecular weight property as recited in Claims 1 and 17. There are two problems with the Examiner's reasoning here. First, Betso says absolutely nothing about the solubility of impact copolymers. Therefore, the Examiner has no basis to compare the solubility of the impact copolymers in Betso with claimed compositions. Second, the Examiner's statement regarding the relationship between molecular weight and solubility is wrong. The solubility of a polymer is dependent upon many things. Although it can be a function of molecular weight (M_w) in general, it is not sufficient to predict the molecular weight (M_w) of a soluble fraction. This is especially true of impact copolymers where the xylene soluble fraction is composed primarily of the non-crystalline ethylene/propylene rubber phase. Therefore, the Examiner has not provided any sound basis for his assertion that the claimed molecular weight (M_w) of the xylene soluble phase is inherent in Betso.

Regarding the intrinsic viscosity of the xylene soluble phase, the Examiner's conclusion is based wholly on his faulty determination that the claimed $M_w/1000$ of 350 is inherent in Betso. Therefore, this conclusion is also erroneous.

Regarding the recitation of a nucleated impact copolymer, the Examiner again starts from the faulty conclusion that the composition disclosed in Betso and the claimed impact copolymers are substantially identical. Based on this summary conclusion, the Examiner then asserts that he has a reasonable basis to believe that the material of Betso is crystalline or semi-crystalline. The Examiner then asserts at page 7 of the Answer that crystalline materials can undergo self-nucleation, without a nucleating agent. Again, there are several problems with the Examiner's reasoning. First, the Examiner has not cited to any authority to support his assertion that

polyolefins are capable of “self-nucleation” or even a definition of what the Examiner understands that term to mean. Second, it is well known that in impact copolymers the continuous phase, which is generally a polypropylene homopolymer, has some degree of crystallinity. Therefore, according to the Examiner’s reasoning all impact copolymers, and indeed all polypropylene polymers, are by definition be nucleated. However, it is well known that nucleating agents are added to crystalline polypropylene materials to improve the degree of crystallinity. Thus it is further well known in the art that a nucleated polyolefin refers to one to which a nucleating agent has been added. In addition, when reading the claims in light of the specification, as they should be, it is clear that a nucleated impact copolymer refers to one to which a nucleating agent has been added. Since Betso says nothing about nucleating agents, the Examiner has no basis to believe that the polymers disclosed by Betso are nucleated as that term is understood in the art or used in the instant claims.

With regard to element (4), an additive package **consisting essentially of** a phenolic antioxidant, a phosphite and an acid scavenger, the Examiner points to column 6, lines 1 to 29 of Betso. Appellants respectfully point out that the relevant section of Betso follows this disclosure, at column 6, lines 30 to 37. However, this section of Betso merely discloses a list of additives that “may” be present in a formulation containing the impact modifiers disclosed by Betso. The Examiner also cites two new references, U.S. 6,221,472 (“Nosu”) and U.S. 6,794,433 (“Dotson”), for the first time, for their disclosure of acid scavengers. The Examiner states that the general disclosures of Nosu and Dotson give him a reasonable basis to believe that the polymers disclosed in Betso inherently contain an acid scavenger. Even if this were so, Appellants respectfully submit that the disclosures of Nosu and Dotson merely add one more additive to the list found in Betso. The combination still does not disclose an additive package,

consisting essentially of a phenolic antioxidant, a phosphite and an acid scavenger as recited in the instant claims.

The Examiner also cites trade literature published by General Electric which discloses an additive system comprising a phenolic antioxidant, a phosphite and an acid scavenger. However, the General Electric reference cannot show that the polymers disclosed in Betso inherently contain this additive package since it is disconnected from a description of the polypropylene to which it is added. The General Electric reference contains no suggestion to combine the disclosed additives, either with the impact modifiers disclosed by Betso or the instantly claimed impact copolymers.

Regarding element (5), an impact copolymer formulated to be essentially free of sodium containing additives, the only support that the Examiner cites to for his assertion is Betso's silence on the issue. On the other hand, the instant specification includes an extensive discussion of the importance of avoiding sodium containing additives. There is nothing in the cited references from which one having ordinary skill in the art could glean this information, let alone its combination with the other claimed features of the impact copolymer and additive package.

Regarding element (6), a thiosynergist, the Examiner has not addressed inherency of this feature in his Answer. However, in the Final Action, the Examiner made the assertion that he had a reasonable basis to define "thiosynergist" as comprising anything, even moisture or air. As the Examiner has not repeated this dubious statement, Appellants assume that it has been withdrawn. Nonetheless, in the Answer, the Examiner has provided no support for an assertion that the polymers of Betso inherently contain a thiosynergist.

D, The Examiner's Assertions with Respect to Claims 12 and 21 are Erroneous

The Examiner asserts that the following elements of Claims 12 and 21 are inherent in Betso:

- (1) A polypropylene homopolymer having a crystallinity of at least 55 percent.
- (2) An additive package consisting essentially of a phenolic antioxidant, a phosphite and an acid scavenger.
- (3) A formulated polypropylene homopolymer that is essentially free of sodium containing additives.
- (4) A thiosynergist.

With respect to element (1), a polypropylene homopolymer having a crystallinity of at least 55 percent, the Examiner does not appear to have presented any specific arguments in the Answer. However, the same arguments presented with respect to element (1) in Claims 1 and 17 above apply equally well here. Betso contains no disclosure regarding the properties of polypropylene homopolymers. Further, no authority has been cited to support an assertion that the polypropylene homopolymers that Betso does disclose necessarily possess the claimed crystallinity.

With regard to elements (2), (3) and (4), the same arguments asserted above with respect to Claims 1 and 17 apply to claims 12 and 21.

IV Rejections Under 35 U.S.C. § 103(a)

The Examiner's rejections of Claims 1 to 6 and 12 to 24 under 35 U.S.C. § 103(a) rely largely on the same erroneous assertions of inherency that the rejections under 35 U.S.C. § 102(b) are based on. The only additional element that the Examiner asserts in his obviousness arguments is with respect to the specific concentrations of additives. For this element the

Examiner cites the General Electric reference. There are two main flaws in the Examiner's analysis. First, the Examiner has not cited to any motivation in either of Betso or the General Electric reference to combine their teachings. Second, both Betso and the General Electric reference are completely silent as to thiosynergists, and therefore do not disclose the claimed concentrations of thiosynergists.

V. Conclusion

The Appellants have provided trade literature that clearly shows that the term "thiosynergist" is well known in the art of polypropylene additives. However, the Examiner asserts that the term is indefinite because the Appellants have not limited the term to a specific type of synergy. This position improperly assumes *a priori* that the Appellants claims are only entitled to a narrow definition of that term. This is an improper application of 35 U.S.C. § 112, second paragraph and should be reversed.

The Examiner's rejections of Claims 1 to 6 and 12 to 24 under 35 U.S.C. §§ 102(b) and 103(a) are grounded almost entirely on unsupported assertions of inherency of the features recited in those claims in Betso. The Examiner has argued that the burden has now shifted to the Appellants to show lack of inherency. This may be the case if the Examiner had established a coherent case for inherency, but the Examiner has not done so. What the Examiner has done is make summary conclusions of inherency that are based on a misinterpretation of the applied reference, Betso, and statements about the involved technology that are either gross oversimplifications or simply wrong. Since the Examiner has not established inherency of the recited features, he has not established anticipation or obviousness of the claimed invention. The rejections under 35 U.S.C. §§ 102(b) and 103(a) should therefore be reversed.

Appellants therefore respectfully request that the Board use its power to reverse the current rejections and remand the instant application to the Examiner for allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'McWilliams', with a stylized flourish at the end.

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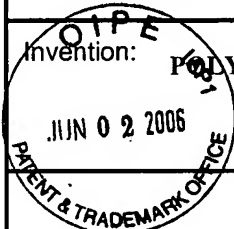
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Group Art Unit

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Invention:

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First Named Inventor

Steven D. Seip, et al.

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1713

Examiner Name

William K. Cheung

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